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09/804,033	03/13/2001	Yasunobu Hashimoto	1466.1030	8838

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EXAMINER

DHARIA, PRABODH M

ART UNIT PAPER NUMBER

2673

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/804,033

Applicant(s)

HASHIMOTO, YASUNOBU

Examiner

Prabodh M Dharia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aratani et al. (6,014,121) in view of Mikoshiba et al. (5,907,316) and Matsushiro (6,459,817 B1).

Regarding Claim 1, Aratani et al. teaches a data conversion method for displaying an image (Col. 9, Lines 22-26), comprising conversion of original frame data indicating gradation of a pixel into display frame data (Col. 9, Lines 27-54, figure 7, Col. 9, Lines 62-66) defining a light emission timing of a display element in a display frame period (Col. 13, Lines 56-63).

However, Aratani et al. fails to teach the conversion, comprising: determining a light emission waveform in accordance with display frame data of plural frames containing a current frame and a previous frame, of an error between the determined light emission waveform and a target light emission waveform defined by the original frame data corresponding to the determined light emission waveform; and setting the display frame data of the current frame.

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However, Mikoshiba et al. teaches the conversion (Col. 14, Lines 3-7, Col. 10, Lines 18-20), comprising: determining a light emission waveform in accordance with display frame data of plural frames containing a current frame and a previous frame (Col. 14, Lines 15-28), of an error between the determined light emission waveform and a target light emission waveform defined by the original frame data corresponding to the determined light emission waveform; and setting the display frame data of the current frame (Col. 5, Lines 57-67, Col. 14, Line 3 to Col. 15, Line 11).

Thus it is obvious to one in the ordinary skill in the art at the time of invention was made to incorporate teaching of Mikoshiba et al. in Aratani et al. teaching for having a high contrast image display medium.

Aratani et al. teaches a data conversion method for displaying an image (Col. 9, Lines 22-26), comprising conversion of original frame data indicating gradation of a pixel into display frame data (Col. 9, Lines 27-54, figure 7, Col. 9, Lines 62-66) defining a light emission timing of a display element in a display frame period (Col. 13, Lines 56-63).

However, Aratani et al. fails to teach performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized

However, Matsushiro teaches performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized (Col. 3, Lines 57-67, Col. 4, Lines 31-41).

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Thus it is obvious to one in the ordinary skill in the art at the time of invention was made to incorporate teaching of Matsushiro in Aratani et al. teaching for reducing unstable and flickering in a high contrast image display medium.

Regarding Claim 2, Matsushiro teaches the weight of each Fourier component is set individually for each light emission color of a display element (Col. 1, Lines 64,65, Col. 11, Lines 34-65).

Regarding Claim 3, Mikoshiba et al. teaches a frequency above a flicker frequency (Col. 8, Lines 52-54, Col. 9, Lines 7-13).

Matsushiro teaches the weight of each Fourier component, of a frequency above a flicker frequency, is set to "0" (Col. 3, Line 57 to Col. 4, Line 41).

Regarding Claim 4, Mikoshiba et al. teaches a display device expressing gradation of original frame data (Col. 10, Lines 50-52) by controlling a light emission timing of a display element in accordance with display frame data (Col. 14, Lines 15-28), the device comprising: an original frame memory memorizing original frame data of at least one frame (Col. 14, Lines 15-17); a display frame memory memorizing display frame data of at least one frame (Col. 8, Lines 33-36); a data converting circuit outputting data corresponding to an input data value as display frame data of the  $n+1_{th}$  frame, responding to an input of original frame data of the  $n+1_{th}$  frame, original frame data of at least an  $n_{th}$  frame from the original frame memory and display frame data of at least an  $n_{th}$  frame from the display frame memory, wherein the display frame data outputted by the data converting circuit (Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line

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23); indicating a gradation transition defined by display frame data of plural frames containing a current frame and a previous frame and a target gradation waveform defined by original frame data corresponding to the gradation waveform (Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line 23).

However, Mikoshiba et al. fails to teach performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized

However, Matsushiro teaches performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized (Col. 3, Lines 57-67, Col. 4, Lines 31-41).

Thus it is obvious to one in the ordinary skill in the art at the time of invention was made to incorporate teaching of Matsushiro in Aratani et al. teaching for reducing unstable and flickering in a high contrast image display medium.

Regarding Claim 5, Matsushiro teaches the Fourier expansion is performed for each time range having a unit of the display frame period (Col. 3, Line 57 to Col. 4, Lines 41).

Regarding Claim 6, Matsushiro teaches the Fourier expansion is performed for each time range having a unit of the original frame period (Col. 3, Line 57 to Col. 4, Line 41).

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Regarding Claim 7, Mikoshiba et al. teaches the target light emission waveform is an interpolation waveform obtained by linear approximation of a transition of discrete target light emission values in each original frame (Col. 2, Line 60, Col. 3, Line 15, Col. 12, Lines 38-46, Col. 14, Lines 3-28, Col. 26, Line 59 to Col. 27, Line 23).

4. Claims 8-14, are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikoshiba et al. (5,907,316) in view of Matsushiro (6,459,817 B1).

Regarding Claim 8, Mikoshiba et al. teaches a display device expressing gradation of original frame data (Col. 10, Lines 50-52) by controlling a light emission timing of a display element in accordance with display frame data (Col. 14, Lines 15-28), the device comprising: an original frame memory memorizing original frame data of at least one frame (Col. 14, Lines 15-17); a display frame memory memorizing display frame data of at least one frame (Col. 8, Lines 33-36); a data converting circuit outputting data corresponding to an input data value as display frame data of the  $n+1_{th}$  frame, responding to an input of original frame data of the  $n+1_{th}$  frame, original frame data of at least an  $n_{th}$  frame from the original frame memory and display frame data of at least an  $n_{th}$  frame from the display frame memory, wherein the display frame data outputted by the data converting circuit (Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line 23); indicating a gradation transition defined by display frame data of plural frames containing a current frame and a previous frame and a target gradation waveform defined by original frame data corresponding to the gradation waveform (Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line 23).

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However, Mikoshiba et al. fails to teach performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized

However, Matsushiro teaches performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized (Col. 3, Lines 57-67, Col. 4, Lines 31-41).

Thus it is obvious to one in the ordinary skill in the art at the time of invention was made to incorporate teaching of Matsushiro in Aratani et al. teaching for reducing unstable and flickering in a high contrast image display medium.

Regarding Claim 9, Matsushiro teaches the weight of each Fourier component is set individually for each light emission color of a display element (Col. 1, lines 64,65, Col. 11, Lines 34-65).

Regarding Claim 10, Mikoshiba et al. teaches a frequency above a flicker frequency (Col. 8, Lines 52-54, Col. 9, Lines 7-13).

Matsushiro teaches the weight of each Fourier component, of a frequency above a flicker frequency, is set to "0" (Col. 3, Line 57 to Col. 4, Line 41).



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Regarding Claim 11, Mikoshiba et al. teaches the display frame period is different from the original frame period (Col. 16, Line 64 to Col. 17, Line 5, Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line 23).

Regarding Claim 12, Matsushiro teaches the Fourier expansion is performed for each time range having a unit of the display frame period (Col. 3, Line 57 to Col. 4, Lines 41).

Regarding Claim 13, Matsushiro teaches the Fourier expansion is performed for each time range having a unit of the original frame period (Col. 3, Line 57 to Col. 4, Lines 41).

Regarding Claim 14, Mikoshiba et al. teaches the target gradation waveform is an interpolation waveform obtained by linear approximation of a transition of discrete target gradation values in each original frame (Col. 2, Line 60, Col. 3, Line 15, Col. 12, Lines 38-46, Col. 14, Lines 21-28, Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line 23).

5. Claims 15,16, are rejected under 35 U.S.C. 103(a) as being unpatentable Mikoshiba et al. (5,907,316) in view of Matsushiro (6,459,817 B1).

Regarding Claim 15, Mikoshiba et al. teaches a display device expressing gradation of original frame data (Col. 10, Lines 50-52) by controlling a light emission timing of a display element in accordance with display frame data (Col. 14, Lines 15-28), the device comprising: an original frame memory memorizing original frame data of at least one frame (Col. 14, Lines 15-

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17); a display frame memory memorizing display frame data of at least one frame (Col. 8, Lines 33-36); a data converting circuit outputting data corresponding to an input data value as display frame data of the  $n+1_{th}$  frame, responding to an input of original frame data of the  $n+1_{th}$  frame, original frame data of at least an  $n_{th}$  frame from the original frame memory and display frame data of at least an  $n_{th}$  frame from the display frame memory, wherein the display frame data outputted by the data converting circuit (Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line 23); indicating a gradation transition defined by display frame data of plural frames containing a current frame and a previous frame and a target gradation waveform defined by original frame data corresponding to the gradation waveform (Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line 23).

However, Mikoshiba et al. fails to teach performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized

However, Matsushiro teaches performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized (Col. 3, Lines 57-67, Col. 4, Lines 31-41).

Thus it is obvious to one in the ordinary skill in the art at the time of invention was made to incorporate teaching of Matsushiro in Aratani et al. teaching for reducing unstable and flickering in a high contrast image display medium.

Regarding Claim 16, Mikoshiba et al. teaches a display device expressing gradation of original frame data (Col. 10, Lines 50-52) by controlling a light emission timing of a display element in accordance with display frame data (Col. 14, Lines 15-28), the device comprising: an original frame memory memorizing original frame data of at least one frame (Col. 14, Lines 15-17); a display frame memory memorizing display frame data of at least one frame (Col. 8, Lines 33-36); a data converting circuit outputting data corresponding to an input data value as display frame data of the  $n+1$ <sub>th</sub> frame, responding to an input of original frame data of the  $n+1$ <sub>th</sub> frame, original frame data of at least an  $n$ <sub>th</sub> frame from the original frame memory and display frame data of at least an  $n$ <sub>th</sub> frame from the display frame memory, wherein the display frame data outputted by the data converting circuit (Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line 23); indicating a gradation transition defined by display frame data of plural frames containing a current frame and a previous frame and a target gradation waveform defined by original frame data corresponding to the gradation waveform (Col. 14, Lines 3-10, Col. 26, Line 59 to Col. 27, Line 23).

However, Mikoshiba et al. fails to teach performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized

However, Matsushiro teaches performing Fourier expansion of the pixel gradation with respect to weights that are obtained by weighting each Fourier component, so that summing the result (error components) helps the changing of the overall darkness of the image is minimized (Col. 3, Lines 57-67, Col. 4, Lines 31-41).

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Thus it is obvious to one in the ordinary skill in the art at the time of invention was made to incorporate teaching of Matsushiro in Aratani et al. teaching for reducing unstable and flickering in a high contrast image display medium.

***Conclusion***

6.. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sano (6,127,992) Method of Driving electric discharge panel.

Ohshima et al. (5,920,299) Color display panel and apparatus.

7.. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prabodh Dharia whose telephone number is (703) 605-1231. The examiner can normally be reached Monday- Friday from 8:00 AM to 5:00 PM.

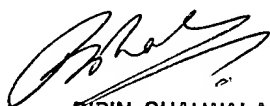
If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached at (703) 305-4938. The fax number of the group is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4750.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

  
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